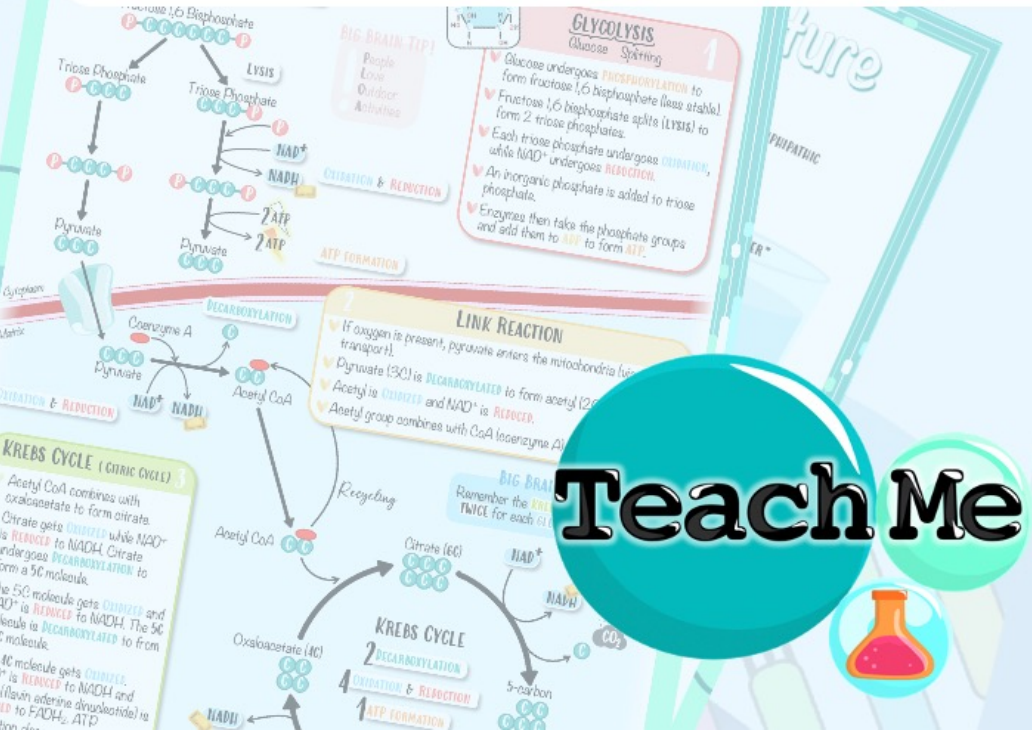
TeachMe

STUDY NOTES

A1.2 DNA & RNA

Last update: 2024.04.07

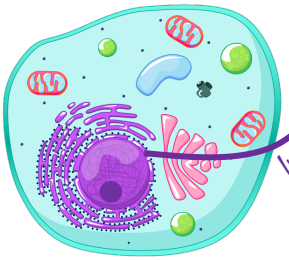


A1.2

DNA Structure

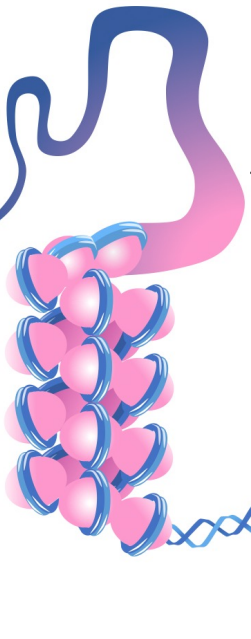
DEOXYRIBONUCLEIC ACID

FUN FACT!
"The DNA of a single cell is 2 meters long"
...SO HOW DOES IT ALL FIT?



CHROMOSOME
wound-up DNA
(23 pairs per cell)

SUPERCOILING
That's how it all fits together!

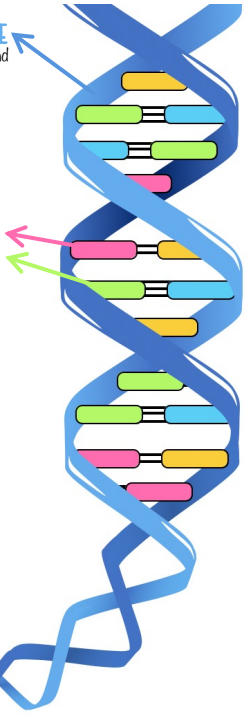


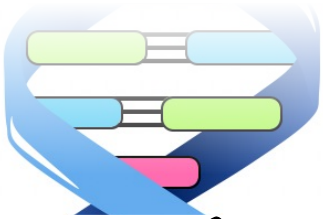
DOUBLE STRANDED HELIX

BACKBONE
(Includes phosphates and deoxyribose sugars)

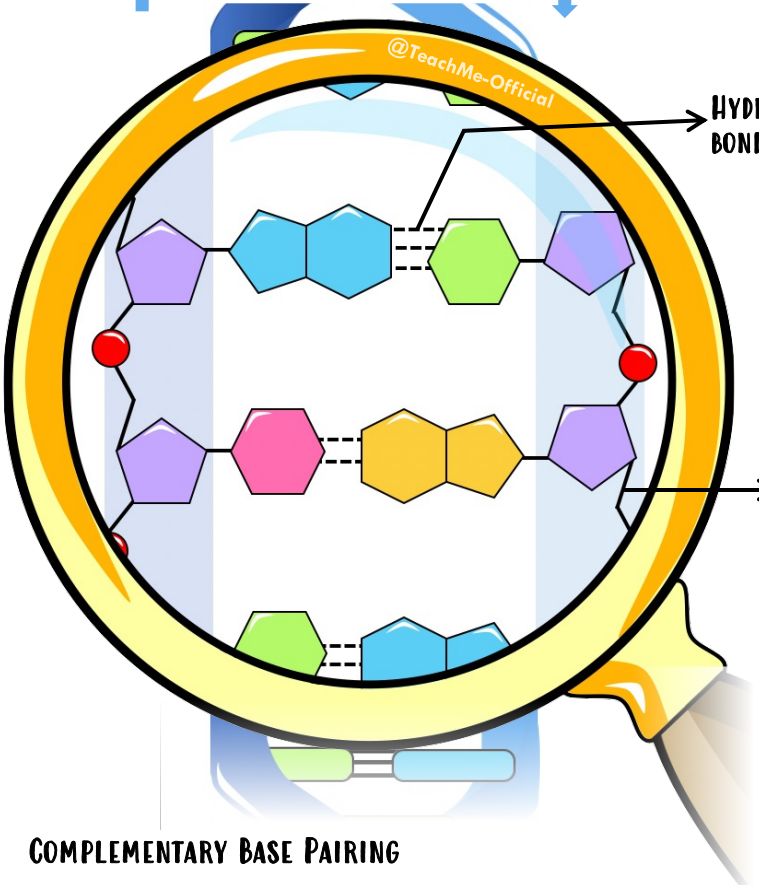
BASES

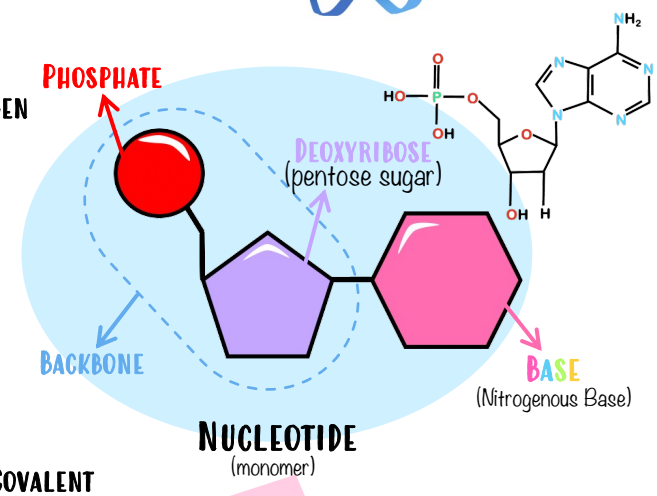
T Thymine	A Adenine
C Cytosine	G Guanine





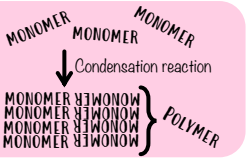
ANTI-PARALLEL STRANDS



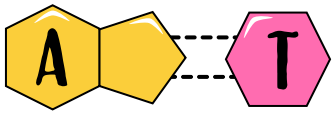


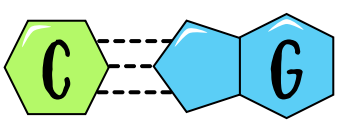
NUCLEOTIDE
(monomer)

Nucleotides are linked together by a **CONDENSATION** reaction to form a polymer (DNA)



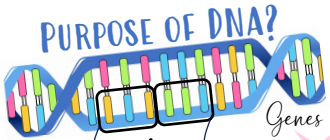
COMPLEMENTARY BASE PAIRING





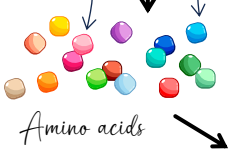
HOW TO REMEMBER?
"A" AND "T" ARE ALWAYS TOGETHER

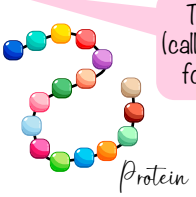
PURPOSE OF DNA?



"the instruction manual"

Gene is a segment of DNA that codes for a protein





Three nucleotides (called a **CODON**) codes for one amino acid

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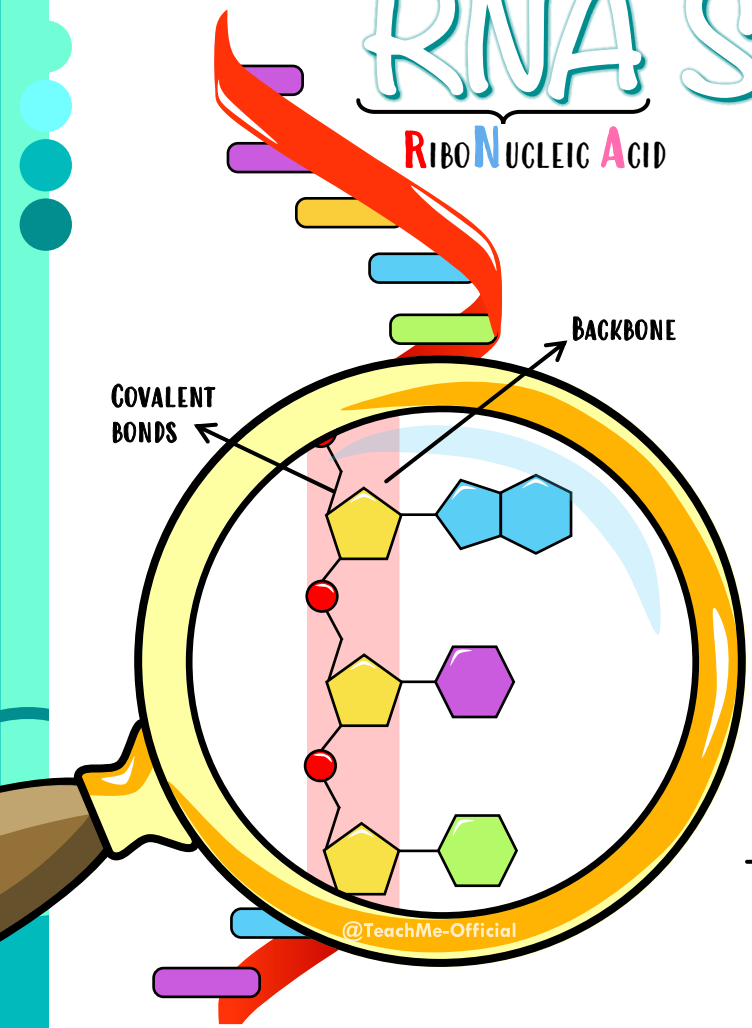
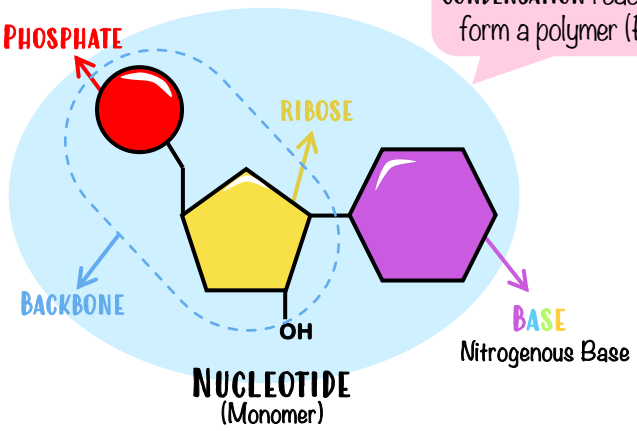
RNA Structure

RiboNucleic Acid



Nucleotides are linked together by a **condensation** reaction to form a polymer (RNA)



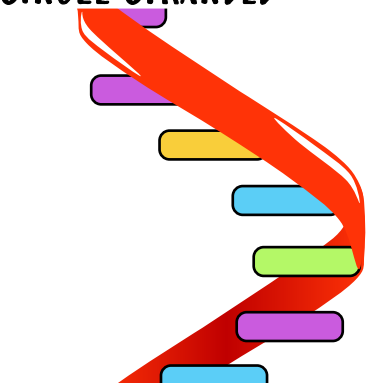
Nucleotide
(Monomer)

Bases

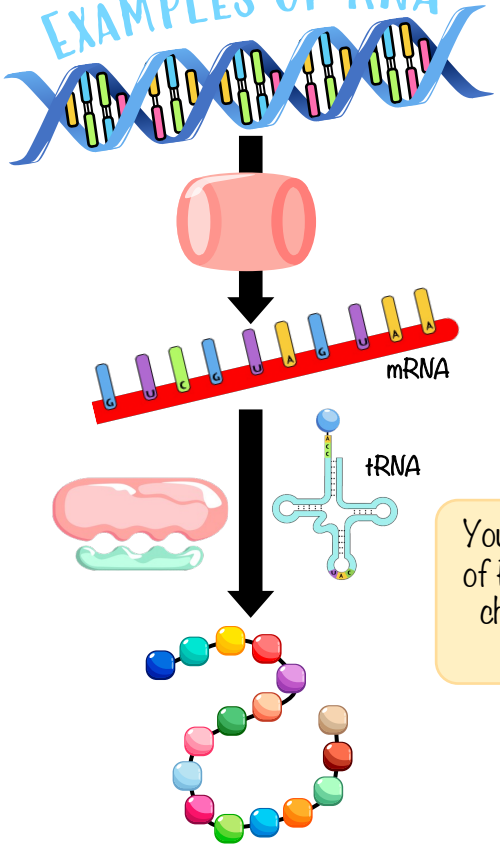
U Uracil	A Adenine
C Cytosine	G Guanine

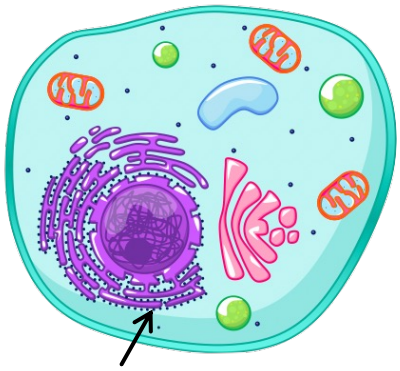
Uracil is only for **RNA** and **Thymine** is only for **DNA**

Single Stranded



Examples of RNA

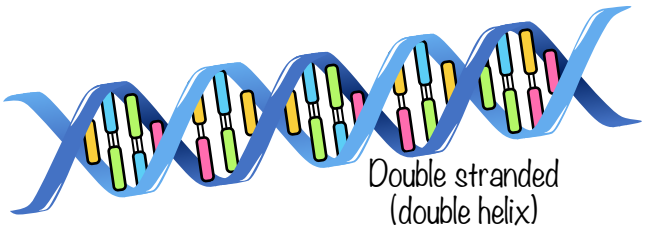
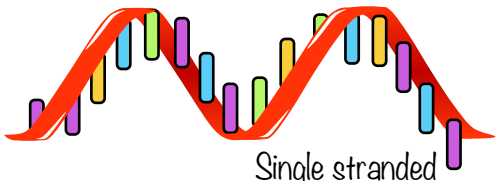
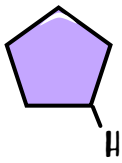
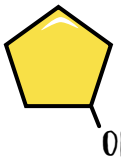




NOTE!

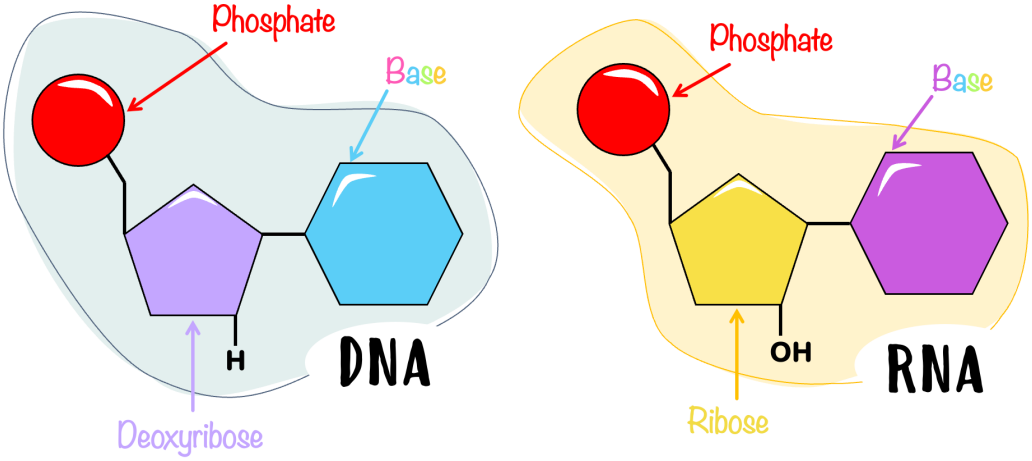
You **WILL** learn about these types of RNA in greater detail in another chapter, just be aware that they exist for now.

DNA vs. RNA

	DNA DeoxyriboNucleic Acid	RNA RiboNucleic Acid
Purpose	Acts as permanent genetic code of a cell/organism	Does not contain a permanent genetic code, can serve as mRNA, tRNA and rRNA.
Strands & Shape	 Double stranded (double helix)	 Single stranded (shape depends on RNA type)
Sugar (pentose sugar)	 Deoxyribose	 Ribose
Base	T Thymine, A Adenine, C Cytosine, G Guanine	U Uracil, A Adenine, C Cytosine, G Guanine

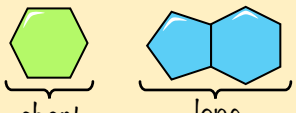
Uracil is only for RNA and Thymine is only for DNA

DNA vs. RNA Nucleotides



NOTE!

You **DO NOT** need to memorize the relative lengths of the bases nor the number of hydrogen bonds between bases for your exam!



notes